

Report of Results: MVA 6423

Arizona Building Dust
Arizona Dept of Corrections
Environmental Forensic Microscopy Analysis

Prepared for:

Compass Environmental Inc.
1751 McCollum Parkway
Kennesaw, GA 30144

Respectfully Submitted by:


James R. Millette, Ph.D.
Executive Director

MVA Scientific Consultants
3300 Breckinridge Boulevard
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Duluth, GA 30096

10 January 2007



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Arizona Building Dust – Arizona Dept of Corrections Environmental Forensic Microscopy Analysis

INTRODUCTION

This report contains the results of analytical work performed on dust from microvac samples received at MVA Scientific Consultants' laboratory on 23 August 2005 via Federal Express. As shown in Table 1 below, the samples that are the subject of this report were the residual dusts retained on the microvac sampler nozzles collected from horizontal surfaces of the Arizona Dept of Corrections after the rest of the sample was prepared following the ASTM D5755 method. It was requested that MVA Scientific Consultants perform an environmental forensic microscopy examination of dust retained on the microvac sampler nozzles. The analyses were done during the period of 11 December 2006 through 10 January 2007.

Table 1. Sample Information

Compass Sample #	MVA ID#	Description
Dust 05	Q1422	AZ Dept. of Corrections, 4th floor rm. 4309, light fixture
Dust 06	Q1423	AZ Dept. of Corrections, 3rd floor rm. 3406, light fixture
Dust 07	Q1424	AZ Dept. of Corrections, 3rd floor rm. 3111, light fixture
Dust 08	Q1425	AZ Dept. of Corrections, 2nd floor rm. 2401, light fixture
Dust 09	Q1426	AZ Dept. of Corrections, 2nd floor rm. 2304, light fixture
Dust 10	Q1427	AZ Dept. of Corrections, 1st floor rm. 1305, new light fixture

ANALYTICAL METHODS

The samples were first examined by stereomicroscopy using a magnification range from 6.5X to 40X. Analysis was then performed by polarized light microscopy including microchemical tests utilizing an Olympus BH-2 polarized light microscope having a magnification range from 40X to 1000X.

RESULTS AND DISCUSSION

The dusts in Samples Q1422 through Q1427 have the same general appearance. They are all fine brown granular dusts. They contain vermiculite, gypsum and chrysotile asbestos (Figures 1 through 3). The particles in the dusts are consistent with normal indoor building dusts^{1,2} (including cotton and other fibers) mixed with fallout from the fireproofing (containing vermiculite, gypsum and chrysotile) that is located in the building.

REFERENCES

1. Millette, J.R., Lioy, P.J., Wietfeldt, J., Hopen, T.J., Gipp, M., Padden, T., Singsank, C., and Lepow, J., "A Microscopical Study of the General Composition of Household Dirt", *Microscope*, 51(4): 201-207, 2003.
2. Hopen, T. J. and Millette, J. R., "Microscopical Characterization of IAQ Dust Particles", in Proceedings of Engineering Solutions to Indoor Air Quality Problems, VIP.51, Air & Waste Management Association, pp. 437-444, 1995.

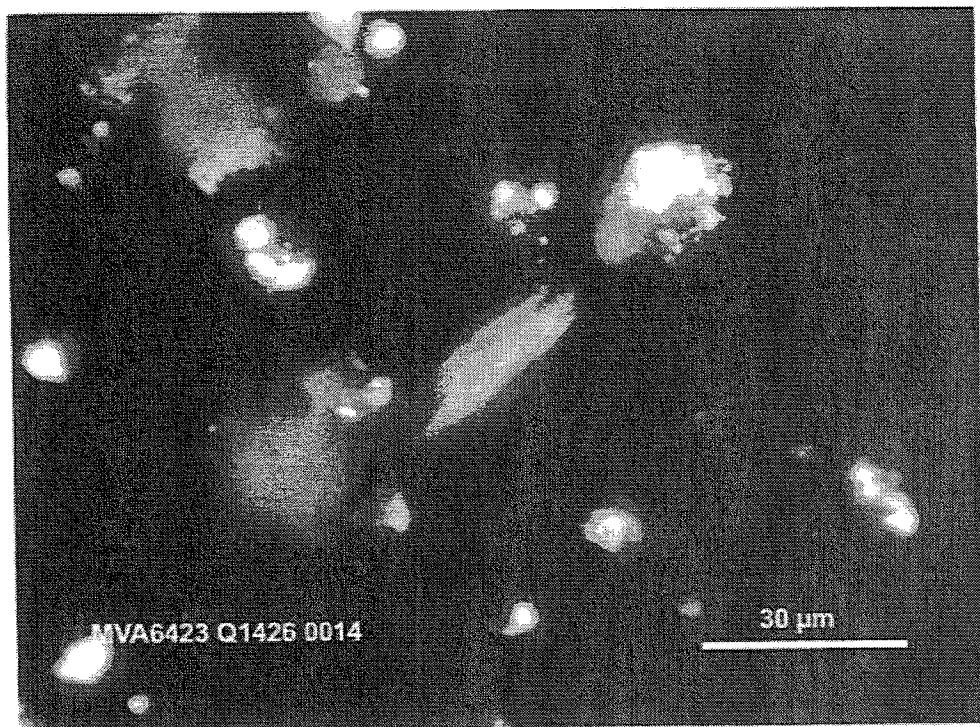


Figure 1. Polarized light microscope image (darkfield mode) of a chrysotile bundle in Sample Q1426.

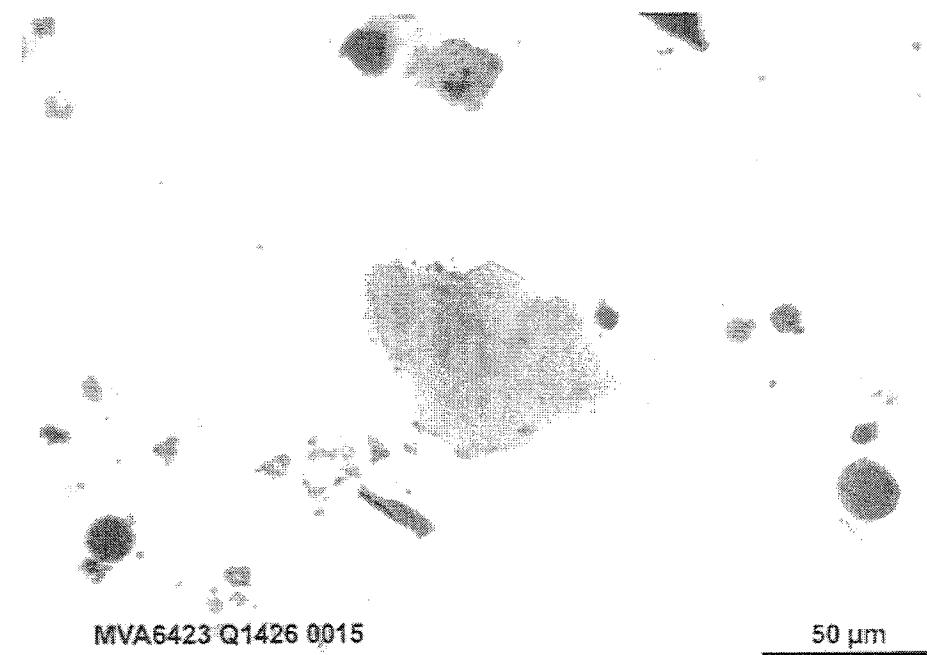


Figure 2. Polarized light microscope image (brightfield mode) of a vermiculite flake in Sample Q1426. Aggregates of gypsum are also evident.

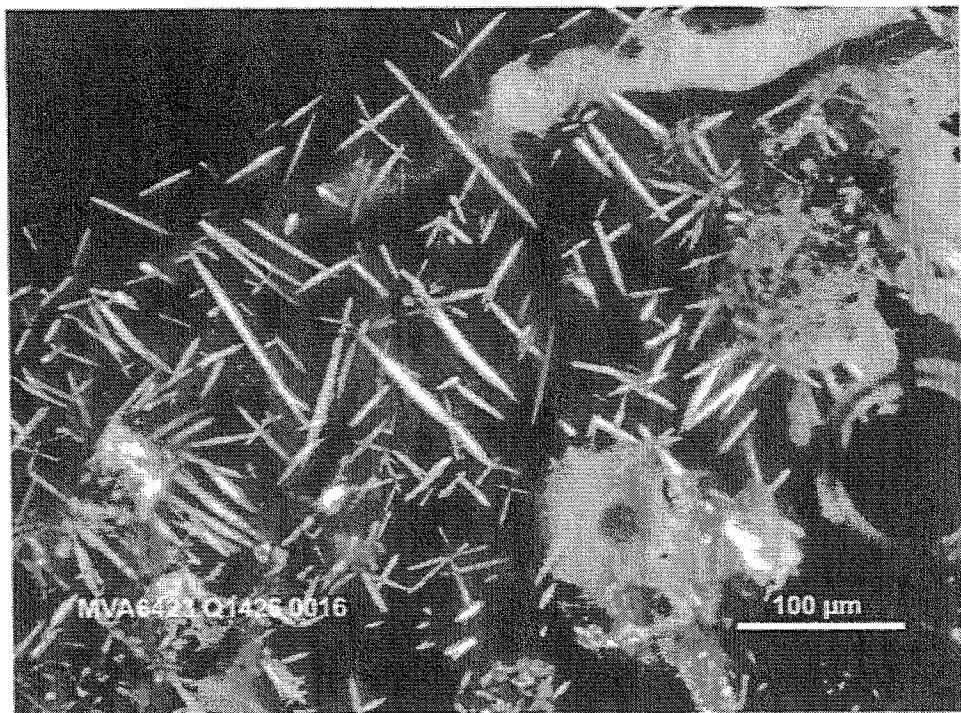


Figure 3. Polarized light microscope image (darkfield mode) of gypsum crystals in Sample Q1426.

SEND RESULTS TO:

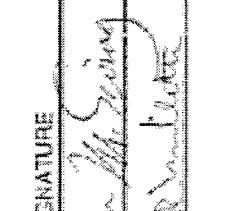
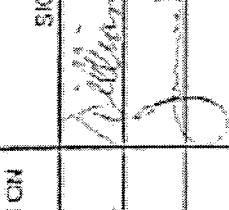
Compass Environmental, Inc.
 1751 McCollum Parkway
 Kennesaw, GA 30044
 Phone (770) 499-7127
 Fax (770) 423-7402

PROJECT NAME: FRIZZONI & COOKS
 PROJECT NO: 3025

CHAIN OF CUSTODY

| SAMPLE NUMBER |
|---------------|---------------|---------------|---------------|---------------|
| DUST-01 | DUST-06 | DUST-11 | DUST-16 | DUST-21 |
| DUST-02 | DUST-07 | DUST-12 | DUST-17 | DUST-22 |
| DUST-03 | DUST-08 | DUST-13 | DUST-18 | DUST-23 |
| DUST-04 | DUST-09 | DUST-14 | DUST-19 | DUST-24 |
| DUST-05 | DUST-10 | DUST-15 | DUST-20 | DUST-25 |

NAME OF ANALYTICAL LABORATORY: MVK

ACTION TAKEN ON SAMPLES	SIGNATURE	PRINT NAME	TITLE	DATE/TIME RECEIVED	DATE/TIME TRANSFERRED
Received		William M. Sappington	Technical Director	8/12/05	8/12/05
		John R. Hause	Manager, Operations	8/12/05	

Report of Results: MVA 6423

**Arizona Building Dust
General Services Building
Environmental Forensic Microscopy Analysis**

Prepared for:

**Compass Environmental Inc.
1751 McCollum Parkway
Kennesaw, GA 30144**

Respectfully Submitted by:



**James R. Millette, Ph.D.
Executive Director**

**MVA Scientific Consultants
3300 Breckinridge Boulevard
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Duluth, GA 30096**

10 January 2007



Report of Results: MVA 6423

Arizona Building Dust – General Services Building Environmental Forensic Microscopy Analysis

INTRODUCTION

This report contains the results of analytical work performed on dust from microvac samples received at MVA Scientific Consultants' laboratory on 23 August 2005 via Federal Express. As shown in Table 1 below, the sample that is the subject of this report was the residual dust retained on the microvac sampler nozzle collected from a horizontal surface of the General Services Building after the rest of the sample was prepared following the ASTM D5755 method. It was requested that MVA Scientific Consultants perform an environmental forensic microscopy examination of dust retained on the microvac sampler nozzle. The analyses were done during the period of 21 December 2006 through 10 January 2007.

Table 1. Sample Information

Compass Sample #	MVA ID#	Description
Dust 50	Q1458	Blank
Dust 53	Q1461	General Services Bldg, NE rm., top of pendant light fixture, west

ANALYTICAL METHODS

The samples were first examined by stereomicroscopy using a magnification range from 6.5X to 40X. Analysis was then performed by polarized light microscopy including microchemical tests utilizing an Olympus BH-2 polarized light microscope having a magnification range from 40X to 1000X.

RESULTS AND DISCUSSION

The dust in Sample Q1461 is a fine brown granular dust with evident fibers. It contains vermiculite, montmorillonite and chrysotile asbestos (Figures 1 through 3). The particles in the dusts are consistent with normal indoor building dusts^{1,2} (including cotton and other fibers) mixed with fallout from the acoustical plaster (containing vermiculite, montmorillonite clay and chrysotile) that is located in the building.

REFERENCES

1. Millette, J.R., Lioy, P.J., Wietfeldt, J., Hopen, T.J., Gipp, M., Padden, T., Singsank, C., and Lepow, J., "A Microscopical Study of the General Composition of Household Dirt", *Microscope*, 51(4): 201-207, 2003.
2. Hopen, T. J. and Millette, J. R., "Microscopical Characterization of IAQ Dust Particles", in Proceedings of Engineering Solutions to Indoor Air Quality Problems, VIP.51, Air & Waste Management Association, pp. 437-444, 1995.

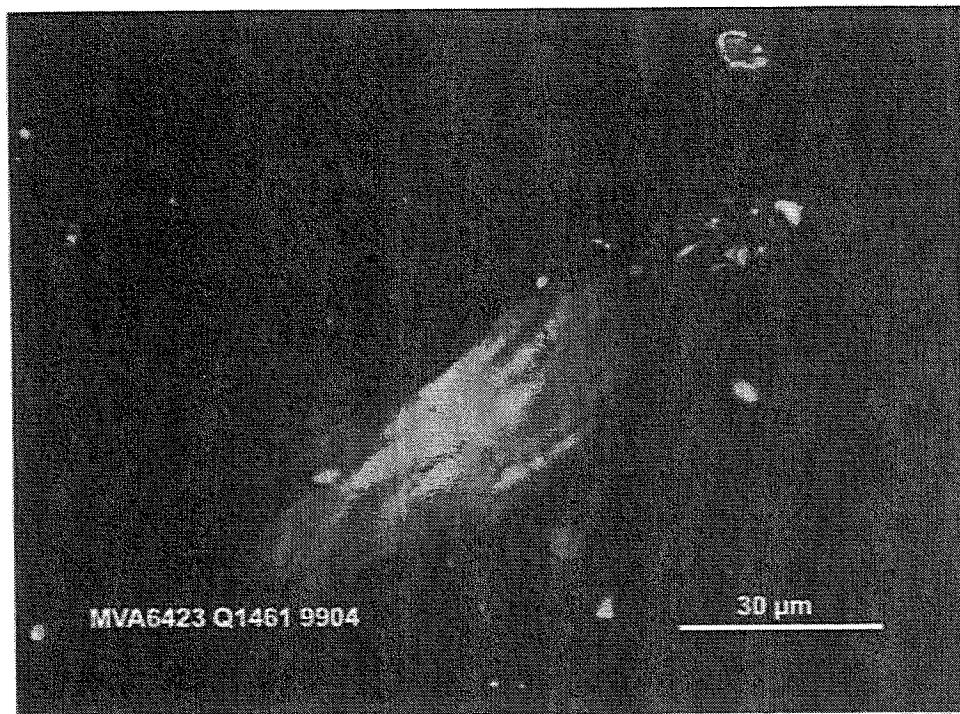


Figure 1. Polarized light microscope image (darkfield mode) of a chrysotile bundle among gypsum and vermiculite flakes in Sample Q1461.

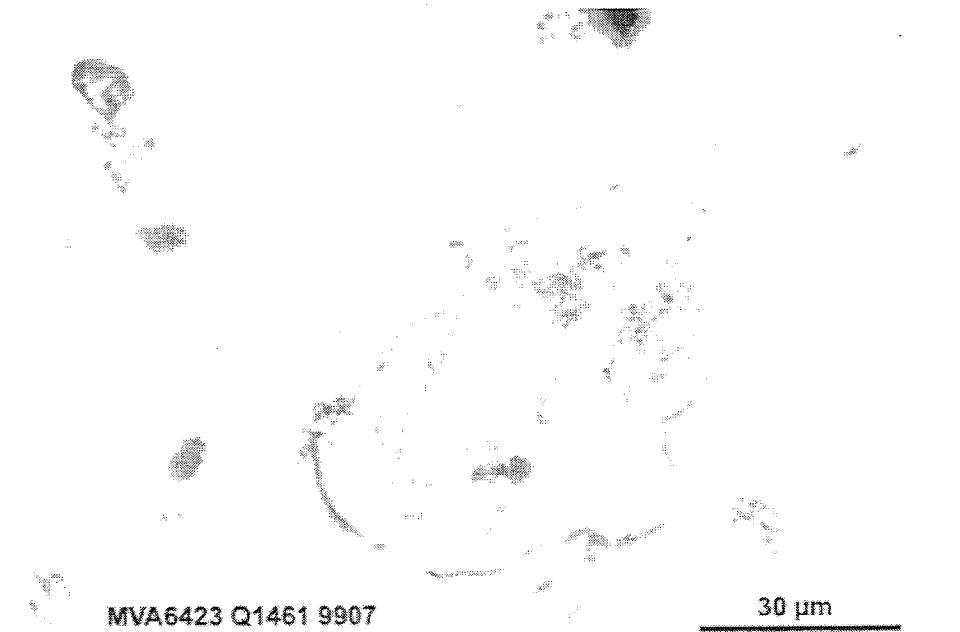
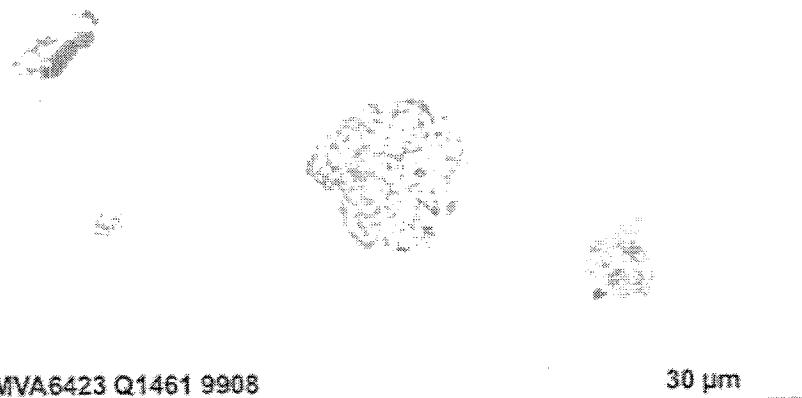


Figure 2. Polarized light microscope image (brightfield mode) of a vermiculite flake in Sample Q1461.



MVA6423 Q1461 9908

30 μm

Figure 3. Polarized light microscope image (brightfield mode) of montmorillonite clay in Sample Q1461.

SEND RESULTS TO:

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CHAIN OF CUSTODY

PROJECT NAME: *Project 2000 - Rockford*
 PROJECT NO.: *8025*

SAMPLE NUMBER	SAMPLE NUMBER	SAMPLE NUMBER	SAMPLE NUMBER
DUST-40	DUST-45	DUST-50	
DUST-41	DUST-46	DUST-51	
DUST-42	DUST-47	DUST-52	
DUST-43	DUST-48	DUST-53	
DUST-44	DUST-49		

NAME OF ANALYTICAL LABORATORY: *MVA*

ACTION TAKEN ON SAMPLES	SIGNATURE	PRINT NAME	TITLE	DATE/TIME RECEIVED	DATE/TIME TRANSFERRED
Collected	<i>William H. Seig</i>	William H. Seig	Technical Director	8/18/05	8/18/05 cont'd
Received	<i>Jeanne R. Kotek</i>	Jeanne R. Kotek	Sample Control Officer	8/18/05	8/18/05 cont'd